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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,065	07/31/2003	Asif D. Gandhi	LUTZ 2 00544	2044

48116 7590 07/11/2008

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EXAMINER	
HOLLIDAY, JAIME MICHELE	
ART UNIT	PAPER NUMBER
2617	
MAIL DATE	DELIVERY MODE
07/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/632,065	GANDHI ET AL.	
	Examiner	Art Unit	
	JAIME M. HOLLIDAY	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 9-14, 17-21 and 23-25* is/are rejected.

7)☒ Claim(s) *4-8,15 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

Response to Arguments

Applicant's arguments with respect to claims 1-21, 24 and 25 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed March 17, 2008, with respect to claim 23, have been fully considered but they are not persuasive.

Applicants basically argue that there is no suggestion to combine relatively fast traffic control with relatively slow control of the number of active connections. Examiner respectfully disagrees, because fast downlink power control is used to increase the system capacity when transferring real time services, such as speech (*traffic channel*), *and* slow downlink power control is used for non-real time services is packet-switched data transmission, where a connection (*active connections*) is established between users by transferring data in packets that include address and control information/data in addition to actual data [paragraphs 49, 50], wherein power control is optimally implemented [paragraph 8].

Therefore, in view of the preceding arguments, Examiner maintains previous rejection of claim 23.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claim 25** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 25 recites the limitation "the received signal strength indicates" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. **Claims 1-3, 9, 12-14, 17, 20 and 21** are rejected under 35 U.S.C. 102(e) as being anticipated by **Tiedemann, Jr. et al. (5,914,950)**.

Referring to **claims 1 and 13**, Tiedemann, Jr. et al. clearly show and disclose a method of wireless communication (method and apparatus for high speed data transmission scheduling; improves utilization of the reverse link and decreases the transmission delay in data communication in a CDMA system by providing for a means of transmitting data traffic at a high speed transmission rate [col. 4 lines 38-44]) comprising: evaluating a reverse link loading (Controller **92** collects the pertinent information from all base stations in the CDMA network and assigns the data transmission rates; controller collects information regarding the demand and capacity for the reverse link [col. 8 line 66- col. 9 line 10]) by examining at least two resources within a first time period (the pertinent

information may include the number of scheduled and unscheduled tasks, the transmit power available to each remote station , the queue size indicating the amount of data to be transmitted by each remote station , the $E_b/(N_o+I_o)$ set point and the measured $E_b/(N_o+I_o)$ for each remote station at base station **4**, the transmission rate for the unscheduled task for each remote station during the prior scheduling periods, the active member set of each remote station listing the cells with which remote station is in communication, the priority of remote stations , and the total power received at each cell for the prior scheduling period [fig. 7, col. 9 lines 25-41]), wherein the evaluating includes selecting at least a first threshold by which at least a first of the at least two resources is evaluated, based on the examination of at least of the at least two resources (having collected the information from each cell, channel scheduler assigns a maximum (*threshold*) scheduled transmission rate for each scheduled user based on the collected information, the set of aforementioned goals, and the list of system constraints [fig. 8, col. 9 lines 42-46]); and broadcasting an availability of resources message in response to the evaluated reverse link loading (channel scheduler sends the scheduling information which contains the maximum scheduled transmission rate to each remote station [fig. 7, fig. 8, col. 9 lines 42-54]).

Referring to **claim 2, 3 and 14**, and **as applied to claims 1, 2 and 13**, respectively, Tiedemann, Jr. et al. further disclose, wherein the step of examining comprises at least one of: examining the at least two resources in use; and

examining the at least two resources leftover (the pertinent information may include the number of scheduled and unscheduled tasks, the transmit power available to each remote station , the queue size indicating the amount of data to be transmitted by each remote station , the $E_b/(N_o+I_o)$ set point and the measured $E_b/(N_o+I_o)$ for each remote station at base station **4**, the transmission rate for the unscheduled task for each remote station during the prior scheduling periods, the active member set of each remote station listing the cells with which remote station is in communication, the priority of remote stations , and the total power received at each cell for the prior scheduling period [fig. 7, col. 9 lines 25-41]); and wherein the at least two resources examined comprise at least one a sector loading, total interference, received signal strength indication rise, per-leg and per-call frame error rate, physical channel erasure statistics and distributions, filtered loading estimate, transmit power and power control outer-loop set point compared to received Ecp/Nt (the pertinent information may include the number of scheduled and unscheduled tasks, the transmit power available to each remote station , the queue size indicating the amount of data to be transmitted by each remote station , the $E_b/(N_o+I_o)$ set point and the measured $E_b/(N_o+I_o)$ for each remote station at base station **4**, the transmission rate for the unscheduled task for each remote station during the prior scheduling periods, the active member set of each remote station listing the cells with which remote station is in communication, the priority of remote stations , and the total

power received at each cell for the prior scheduling period [fig. 7, col. 9 lines 25-41]).

Referring to **claims 9 and 17**, and **as applied to claims 3 and 14 above**, respectively, Tiedemann, Jr. et al. further disclose, wherein the availability of resources message corresponds with at least one of an overload condition, increasing a number of active connections, maintaining the number of active connections, decreasing the number of active connections, increasing an available transmit rate, maintaining the available transmit rate and decreasing the available transmit rate (channel scheduler sends the scheduling information which contains the maximum scheduled transmission rate to each remote station; during a scheduling period, if the capacity of the cells does not support data transmission at the maximum scheduled transmission rates, channel scheduler can direct data transmission at lower transmission rates [col. 9 lines 46-48, col. 13 lines 29-32]).

Referring to **claims 12 and 20**, and **as applied to claims 9 and 17 above**, respectively, Tiedemann, Jr. et al. further disclose, determining an available transmit rate in response to examining the at least two resources associated with the reverse link within a second time period, the second time period being an order of magnitude greater than the first time period (the transmission rate can be reassigned during the scheduling period to match the reverse link demand with the available reverse link capacity; data transmission occurs at or below the maximum scheduled transmission rate for the duration of

the scheduling period, without the use of the transmission rate reassignment routine; the maximum scheduled transmission rates can be reassigned at each frame to maintain a quality communication; during the scheduling period, if the reverse link capacity for the cells does not support data at the maximum scheduled transmission rates, channel scheduler 12 directs data transmissions at lower transmission rates [col. 15 lines 2-17]).

Referring to **claim 21**, Tiedemann, Jr. et al. clearly show and disclose a method of wireless communication over a reverse link (method and apparatus for high speed data transmission scheduling; improves utilization of the reverse link and decreases the transmission delay in data communication in a CDMA system by providing for a means of transmitting data traffic at a high speed transmission rate [col. 4 lines 38-44]) comprising: determining a loading on the reverse link (Controller **92** collects the pertinent information from all base stations in the CDMA network and assigns the data transmission rates; controller collects information regarding the demand and capacity for the reverse link [col. 8 line 66-col. 9 line 10]), wherein the evaluating includes selecting at least a first threshold by which at least a first of the at least two resources is evaluated, based on the examination of at least of the at least two resources (having collected the information from each cell, channel scheduler assigns a maximum (*threshold*) scheduled transmission rate for each scheduled user based on the collected information, the set of aforementioned goals, and the list of system constraints [fig. 8, col. 9 lines 42-46]); managing the reverse link loading in response to the

determined reverse link loading by at least one of controlling a traffic channel data rate and controlling a number of active connections (channel scheduler sends the scheduling information which contains the maximum scheduled transmission rate to each remote station; during a scheduling period, if the capacity of the cells does not support data transmission at the maximum scheduled transmission rates, channel scheduler can direct data transmission at lower transmission rates [col. 9 lines 46-48, col. 13 lines 29-32]); and broadcasting an availability of resource message in response to the determined reverse link loading (channel scheduler sends the scheduling information which contains the maximum scheduled transmission rate to each remote station [fig. 7, fig. 8, col. 9 lines 42-54]).

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. **Claims 10 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tiedemann, Jr. et al. (5,914,950)** in view of **Chung et al. (US 2002/0151310)**.

Referring to **claims 10 and 18**, and **as applied to claims 9 and 17 above**, respectively, Tiedemann, Jr. et al. clearly show and disclose the claimed invention except that the availability of resources message comprises a reverse activity bit.

In a similar field of endeavor, Chung et al. clearly show and disclose wherein the availability of resources message comprises a reverse activity bit (sending a reverse activity bit [page 2, paragraph 17]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Tiedemann, Jr. et al. to show that the availability of resources message comprises a reverse activity bit, as taught by Chung et al, the motivation being determining an optimal rate using the reverse activity bit (Chung et al, page 2, paragraph 17).

4. **Claims 11 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tiedemann, Jr. et al. (5,914,950)** in view of **Vanghi (US 2003/0031130 A1)**.

Referring to **claims 11 and 19**, and **as applied to claims 9 and 17 above**, respectively, Tiedemann, Jr. et al. clearly show and disclose the claimed

invention except that controlling reverse link is based on received signal strength and a loading estimate.

In a similar field of endeavor, Vanghi clearly shows and discloses controlling the reverse link by at least one of: managing a traffic channel in response to an average of the received signal strength indication rise and the filtered loading estimate; and managing the number of active connections in response to the average of the received signal strength indication rise and the filtered loading estimate (reverse link flow control in a high data rate network determines current reverse link data channel rates for access terminals served by a network sector to identify corresponding defined channel gains, which are used to rapidly and reliably estimate total sector interference on the reverse link [abstract]; the system **30** receives information from the interfaces **32** for each open connection supported by the RBS **14**, and uses this information to calculate reverse link loading; with RRI and pilot SNR for each terminal, the system determines the individual interference contribution of each terminal served by the sector; in performing these look-up operations, the load estimator uses each terminal's RRI information to select the correct reverse data channel gain for that terminal; the load estimator may low-pass filter the R_{EXC} values for smoothing before outputting them to threshold detector [paragraphs 35-39]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Tiedemann, Jr. et al. to use the pilot SNR (signal strength) to estimate a load which is filtered, as taught by Vanghi, the

motivation being to allow for rapid reverse flow control adjustment (Vanghi; paragraph 8).

5. **Claim 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tiedemann, Jr. et al. (5,914,950)** in view of **Holma et al. (US 2002/0136192)**.

Referring to **claim 23**, and **as applied to claim 21 above**, Tiedemann, Jr. et al. clearly show and disclose the claimed invention except that the step of controlling a traffic channel comprises a relatively faster control of the traffic channel and the step of controlling a number of active connections comprises a relatively slower control.

In a similar field of endeavor, Holma et al. clearly show and disclose wherein the step of controlling a traffic channel comprises a relatively faster control of the traffic channel and the step of controlling a number of active connections comprises a relatively slower control (fast power control is used for modifying transmission power and that slow power control is used for data retransmissions, i.e. connections [page 4, paragraph 51]; fast downlink power control increases the system capacity when transferring real time services, such as speech (*traffic channel*); when non-real time services are transferred it is preferable for the system capacity to use slow downlink power control; an example of non-real time services is packet-switched data transmission, where a connection (*active connections*) is established between users by transferring data in packets that include address and control information/data in addition to

actual data; ARQ (Automatic Repeat Request) protocol refers to a procedure in which the retransmission of the data to be transferred can improve the reliability of the data to be transferred by increasing the bit error rate thereof [paragraphs 49, 50]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Tiedemann, Jr. et al. to show fast and slow power control of traffic and user connections, as taught by Holma et al, the motivation being an optimal power control method depending on the different services (Holma et al.; paragraph 8).

6. **Claim 24** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tiedemann, Jr. et al. (5,914,950)** in view of **Holma et al. (US 2002/0136192)**, and in further view of **Vanghi (US 2003/0031130 A1)**.

Referring to **claim 24**, and **as applied to claim 23 above**, Tiedemann, Jr. et al. clearly show and disclose the claimed invention except that controlling reverse link is based on received signal strength and a loading estimate.

In a similar field of endeavor, Vanghi clearly shows and discloses wherein the managing the reverse link loading is performed in response to an average of a rise in a received signal strength indication and filtered loading estimation, the average comprising at least one of a relatively shorter term and a relatively longer term average (reverse link flow control in a high data rate network determines current reverse link data channel rates for access terminals served

by a network sector to identify corresponding defined channel gains, which are used to rapidly and reliably estimate total sector interference on the reverse link [abstract]; the system **30** receives information from the interfaces **32** for each open connection supported by the RBS **14**, and uses this information to calculate reverse link loading; with RRI and pilot SNR for each terminal, the system determines the individual interference contribution of each terminal served by the sector; in performing these look-up operations, the load estimator uses each terminal's RRI information to select the correct reverse data channel gain for that terminal; the load estimator may low-pass filter the R_{EXC} values for smoothing before outputting them to threshold detector [paragraphs 35-39]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Tiedemann, Jr. et al. to use the pilot SNR (signal strength) to estimate a load which is filtered, as taught by Vanghi, as modified by Holma, the motivation being to allow for rapid reverse flow control adjustment (Vanghi; paragraph 8).

7. **Claim 25** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tiedemann, Jr. et al. (5,914,950)** in view of **Padovani et al. (US 6,442,398 B1)**.

Referring to **claim 25**, and **as applied to claim 21 above**, Tiedemann, Jr. et al. clearly show and disclose the claimed invention except that the load on the reverse is determined using RSSI and noise floor.

In a similar field of endeavor, Padovani et al. clearly show and disclose that the step of determining a loading on the reverse link comprises: sampling the received signal strength indication; and calculating a noise floor and the rise in the signal strength indication in response to the sampling of the received signal strength indication (method and apparatus for determining loading in a communication system [abstract]; a known low energy deterministic signal is injected into the base station receiver prior to signal-to-strength detection circuit; during the period of silence, a signal-to-noise ratio due to this SS signal is measured, and used as a calibrated reference for the noise floor P_n; once normal system operation is resumed, the signal-to-noise ratio due to this signal, now degraded by other reverse link signals, is measured, and used as a measure of the power level P_n; the load is then calculated using these measurements; at the next period of silence a new calibrated reference measurement reflecting the noise floor P_n is taken; once normal system operation is resumed, and measurements of the reverse link signal P_a are taken, the load is calculated using this new P_n [col. 6 lines 20-34]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Tiedemann, Jr. et al. to calibrate the noise floor with the measured signal strength signal, as taught by Padovani et al, the motivation being to determine reverse link load.

Allowable Subject Matter

8. **Claims 4-8, 15 and 16** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAIME M. HOLLIDAY whose telephone number is (571)272-8618. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, V. Paul Harper can be reached on (571) 272-7605. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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